

What is Claimed is:

- 5 1. An ultraviolet block material, characterized in that, a transmittance for the light within a wavelength range of 300-380 nm is 10% or less and a transmittance for the light within a wavelength range of 420-800 nm is 90% or more.
- 10 2. The ultraviolet block material according to claim 1, wherein a transmittance for the light within a wavelength range of 300-390 nm is 10% or less.
3. The ultraviolet block material according to claim 1, wherein a transmittance for the light within a wavelength range of 300-400 nm is 10% or less.
- 15 4. The ultraviolet block material according to claim 1, wherein the ultraviolet block material contains an ultraviolet radiation absorber and a fluorescent material.
- 20 5. The ultraviolet block material according to claim 4, wherein the ultraviolet radiation absorber is contained in an amount of 5-30% by weight to the base material.
6. The ultraviolet block material according to claim 4, wherein the fluorescent material is contained in an amount of 5-30% by weight to the base material.
- 25 7. The ultraviolet block material according to claim 1, wherein the ultraviolet block material has a substrate and an ultraviolet block layer provided on the substrate in a releasable manner.
- 30 8. The ultraviolet block material according to claim 7, wherein the ultraviolet block layer has a layer containing a fluorescent material, the layer having the fluorescent material has at least one layer between it and the substrate and also has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material and any of the layers has an ultraviolet radiation absorber.
- 35 9. The ultraviolet block material according to claim 8, wherein at least one of the layers existing between the substrate and the layer containing the fluorescent material contains an ultraviolet radiation absorber.
- 40 10. The ultraviolet block material according to claim 8, wherein the layer containing the fluorescent material contains an ultraviolet radiation absorber.
11. The ultraviolet block material according to claim 8, wherein at least one layer between the substrate and the layer containing the fluorescent material and the layer containing the fluorescent material has an ultraviolet radiation absorber.
- 45 12. The ultraviolet block material according to claim 7, wherein the ultraviolet block layer has a layer containing a fluorescent material and the layer containing the fluorescent material contains an ultraviolet radiation absorber and a stabilizer.

13. The ultraviolet block material according to claim 12, wherein the ultraviolet block layer has at least one layer between the substrate and the layer containing the fluorescent material.

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14. The ultraviolet block material according to claim 12, wherein the ultraviolet block layer has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material.

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15. The ultraviolet block material according to claim 12, wherein ultraviolet block layer has at least one layer between the substrate and the layer containing the fluorescent material and also has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material.

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16. The ultraviolet block material according to claim 13, wherein the at least one of the layers existing between the substrate and the layer containing the fluorescent material contains an ultraviolet radiation absorber.

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17. The ultraviolet block material according to claim 7, wherein the ultraviolet block layer has a layer containing a fluorescent material and at least one layer containing an ultraviolet radiation absorber between the substrate and the layer containing the fluorescent material and the layer containing the fluorescent material contains a stabilizer.

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18. The ultraviolet block material according to claim 17, wherein the ultraviolet block layer has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material.

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19. The ultraviolet block material according to claim 14, wherein the farthest layer from the substrate among the layers provided on the side, opposite to the substrate, of the layer containing the fluorescent material is an adhesive layer showing tackiness by means of heating or pressurization.

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20. The ultraviolet block material according to claim 7, wherein the farthest layer from the substrate in the ultraviolet block layer is a layer which receives color materials.

21. The ultraviolet block material according to claim 1, wherein the ultraviolet block material has a substrate and an ultraviolet block layer adhered on the substrate.

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22. The ultraviolet block material according to claim 21, wherein the ultraviolet block layer has a layer containing a fluorescent material and has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material and any of the layers contains an ultraviolet radiation absorber.

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23. The ultraviolet block material according to claim 22, wherein the layer containing the fluorescent material contains an ultraviolet radiation absorber.

24. The ultraviolet block material according to claim 22, wherein there is at least one layer between the substrate and the layer containing a fluorescent material.

5 25. The ultraviolet block material according to claim 24, wherein the at least one layer between the substrate and the layer containing the fluorescent material contains an ultraviolet radiation absorber.

10 26. The ultraviolet block material according to claim 24, wherein the layer containing the fluorescent layer and at least one layer between the substrate and the layer containing the fluorescent material contains an ultraviolet radiation absorber.

15 27. The ultraviolet block material according to claim 21, wherein the ultraviolet block layer has a layer containing a fluorescent material and the layer containing the fluorescent material contains an ultraviolet radiation absorber and a stabilizer.

20 28. The ultraviolet block material according to claim 27, wherein the ultraviolet block layer has at least one layer between the substrate and the layer containing the fluorescent material.

25 29. The ultraviolet block material according to claim 27, wherein the fluorescent block layer has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material.

30 30. The ultraviolet block material according to claim 27, wherein the ultraviolet block layer has at least one layer between the substrate and the layer containing the fluorescent material and also has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material.

35 31. The ultraviolet block material according to claim 28, wherein at least one of the layers existing between the substrate and the layer containing the fluorescent material contains an ultraviolet radiation absorber.

40 32. The ultraviolet block material according to claim 21, wherein the ultraviolet block layer has a layer containing a fluorescent material and also at least one layer between the substrate and the layer containing the fluorescent material and the layer containing the fluorescent material contains a stabilizer.

45 33. The ultraviolet block material according to claim 32, wherein the ultraviolet block layer has at least one layer on the side, opposite to the substrate, of the layer containing the fluorescent material

34. The ultraviolet block material according to claim 21, wherein there is an abrasion-resisting layer on the side, opposite to the ultraviolet block layer, of the substrate.

35. The ultraviolet block material according to claim 29, wherein the farthest layer from the substrate among the layers provided on the side, opposite to the substrate, of the

layer containing the fluorescent material is an adhesive layer showing a tackiness by means of heating or pressurization.

36. The ultraviolet block material according to claim 21, wherein the farthest layer from the substrate of the ultraviolet block layer or the side, opposite to the ultraviolet block layer, of the substrate is a layer which receives color materials.

37. A method for the protection of a material to be transferred, characterized in that, there are included steps where the farthest side from the substrate of the ultraviolet block layer of the ultraviolet block material mentioned in claim 7 is layered to contact the material to be transferred and then the substrate is separated from the ultraviolet block layer.

38. The method for the protection according to claim 37, wherein image is formed by an ink jet recording system or a thermal transfer printing system on the surface of the material to be transferred with the ultraviolet block layer of the ultraviolet block material.

39. A method for the protection of the material to be layered, characterized in that, the farthest side of the ultraviolet block layer of the ultraviolet block material mentioned in claim 21 from the substrate is adhered to contact the material to be layered.

40. The method for the protection according to claim 39, wherein image is formed by an ink jet recording system or a thermal transfer printing system on the surface of the material to be layered with the ultraviolet block material.

41. A method for the protection from ultraviolet light, characterized in that, there are included the steps where image is formed on the color material-receiving layer of the ultraviolet block material mentioned in claim 20, then a substrate paper is layered on the color material-receiving layer and the substrate is separated from the ultraviolet block layer.

42. A method for the protection of a material to be adhered, characterized in that, image is formed on a color material-receiving layer of the ultraviolet block material mentioned in claim 36 and then a substrate paper is layered on the color material-receiving layer.

43. A material being protected from ultraviolet light, which is prepared by a method of claim 37.

44. An ultraviolet block material having a substrate and an ultraviolet block layer provided on the substrate in a releasable manner, the ultraviolet block material which is characterized in that, in the said ultraviolet block layer, the transmittance of the light within a range of 300-380 nm wavelength is 10% or less and the transmittance of the light within a range of 420-800 nm wavelength is 90% or more.

45. A method for the protection of a material to be transferred, characterized in that, the said method includes the steps that the farthest side of the ultraviolet block layer in the ultraviolet block material mentioned in claim 44 from the substrate is layered to contact the material to be transferred and then the substrate is separated from the ultraviolet block layer.

46. A material which is protected from ultraviolet light, characterized in that, the ultraviolet block layer of the ultraviolet block material mentioned in claim 44 is layered onto the material to be transferred.

47. An ultraviolet absorbing coating composition comprising a resin system selected from the group consisting of phenoxy resins and acrylic resins, approximately 20% by volume of resin solids, ultraviolet filter materials selected from the group consisting of benzotriazoles and benzophenones, 2.5% to 8.5% of volume of resin solids; and an evaporable vehicle to make 100%.

48. A composition in accordance with claim 47, including a melamine crosslinking material up to 6% of total volume of resin solids.

49. In the manufacture of a light emitting device including a glass envelope, the step of coating a surface of said envelope with an ultraviolet light-absorbing coating including a resin selected from the group consisting of phenoxy resins and acrylic resins, and an ultraviolet filter material selected from the group consisting of benzotriazoles and benzophenones.

50. An ultraviolet radiation-absorbing coating composition comprising a resin system selected from the group consisting of phenoxy resins, acrylic resins, and melamine resins ranging from 10% to 40% of resin solids; an ultraviolet absorption material selected from the group consisting of benzotriazoles and benzophenones ranging from 0.2% to 10% of resin solids; an optical brightener material ranging from 1% to 6% of resin solids, and an evaporable vehicle to make 100%.

51. The coating composition set forth in claim 50, including:

P-toluene sulfuric acid catalyst – range 0.01%-0.3% of resin solids.

52. The coating composition set forth in claim 50, in accordance with the following formulation, with proportions based upon resin solids, including an optical brightener:

Resin solids – range 20% -50%
P-toluene sulfuric acid catalyst – range 0.01%-0.3%
Optical brightener – range 1%-8%
Ultraviolet absorber – range 0.1% - 4%

53. The coating composition set forth in claim 50, in accordance with the following formulation, with proportions based upon resin solids, including an optical brightener:

5 GR 150 at 15% solids.
Methyl isobutyl ketone/toluene to make 100%
Optical brightener 19% based on resin solids
Mix and slip compound 0.08% based on resin solids
Acetylacetone 8% of total weight

10 54. The coating composition set forth in claim 50, in accordance with the following formulation, with proportions based upon resin solids, including an optical brightener:

15 GR 908 at 15% solids.
Methyl isobutyl ketone/toluene to make 100%
Optical brightener 19% based on resin solids
Mix and slip compound 0.08% based on resin solids
Acetylacetone 8% of total weight

20 55. An ultraviolet radiation absorbing coating composition for use with a high temperature light source comprising: a polysiloxane resin system, and an optical brightener of approximately nineteen percent of the resin solids

25 56. A coating composition in accordance with claim 55, further comprising methyl isobutyl ketone, toluene, and acetylenylacetone as an optical brightener dispersant.

30 57. An ultraviolet radiation absorbing coating system comprising a first synthetic resinous layer having an ultraviolet radiation absorber with an ultraviolet cutoff lower than about 385 nanometers, and a fluorescent material which reflects ultraviolet radiation of wavelength above 385 nanometers; and a second layer overlying said first layer and having an ultraviolet radiation absorbent material which blocks at least some ultraviolet radiation affecting the fluorescent material.

35 58. A coating system in accordance with claim 57, in which said second layer is comprised of a polysiloxane material.

59. A coating system in accordance with claim 57, in which said first and second layers are applied to opposite surfaces of a polyester film.

40 60. A system in accordance with claim 57, in which said first and second layers are applied to oppositely disposed surfaces of a synthetic resinous film.

45 61. A system in accordance with claim 60, in which said film includes an adhesive for application to a printed surface of a protected substrate.

62. An ultraviolet absorbing coating system in accordance with claim 57, including first and second inner and outer coatings of the following formulation. Parts are by weight of solids.

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Inner Coating

| | | |
|----|---|--------------------------|
| | Acryloid A 21 - (Rohm & Haas) | 25% (solids) |
| | Uvitex OB - (Ciba-Geigy Corp.) | 11% based on solids |
| | Tinuvin 328 - (Ciba-Geigy Corp.) | 8% based on solids |
| 10 | Acetylacetone | 8% based on total weight |
| | Diluent toluene or xylene - depending upon method of application. | |

Outer Coating

| | | |
|----|----------------------------------|----------------------------|
| 15 | GR 653 polysiloxane coating - | |
| | (Techneglas) | 97.5 parts |
| | Tinuvin 328 - (Ciba-Geigy Corp.) | 1.5% based on GR653 solids |
| | Toluene - | 1% based on total weight |

20 63. An ultraviolet absorbing coating system in accordance with claim 57, including first and second inner and outer coatings of the following formulation:

| | | |
|----|--------------------------------|-------------------------------|
| 25 | Desmodur N-75: Bayer | 36% of urethane solids |
| | Desmophen 670A-80: Bayer | 64% of urethane solids |
| | Catalyst, dibutyltindilaurate: | 0.1% based on urethane solids |
| | Tinuvin 328 - (Ciba-Geigy) | 8% based on urethane solids |
| | Tinuvin OB - (Ciba-Geigy) | 11% based on urethane solids |
| | Flurad 430 - (3M) | 0.1% based on urethane solids |
| 30 | Diluent, Toluene | To make 100% |

Outer Layer - Acrylic

| | | |
|----|-------------------------------|------------------------------------|
| 35 | Acryloid A-21 - (Rohm & Haas) | received at 30% solids, diluted to |
| | 25% solids | with toluene |
| | Flurad 430 (3M) | 0.1% based on total coating |
| | Tinuvin 328 - (Ciba-Geigy) | 8% based on A-21 solids |
| | Tinuvin OB - (Ciba-Geigy) | 11%, based on A-21 solids |
| 40 | Acetylacetone | 8% of total weight |

45 64. An ultraviolet absorbing coating system in accordance with claim 57, said first and second coatings having the following formulation: Percentages based on resin solids.

Polysiloxane Outer Coating

| | | |
|---|--|----------------------|
| 5 | SHC 4000 (General Electric) | 98.4% [OR 98.2 AS IN |
| | CLAIM 8] | |
| | Tinuvin-328 (Ciba-Geigy) | 1.5% |
| | Triethanolamine | 0.01% |
| | Toluene for appropriate coating thickness. | |

Acrylic Inner Layer

| | | |
|----|-------------------------------|--|
| 10 | Joncryl 537 – (Johnson's Wax) | Aqueous acrylic dispersion |
| | Uvinul D40 – (BASF-Wyandotte) | 8% based on resin solids [or 1.5 as in |
| | claim 8] | |
| | Flurad 430 – (3M) | 0.1% based on resin solids |
| 15 | Triethanolamine | 0.1% based on resin solids |
| | OBA Quencher – | |
| | (Kalamazoo Chemical Corp.) | 0.1% based on resin solids |